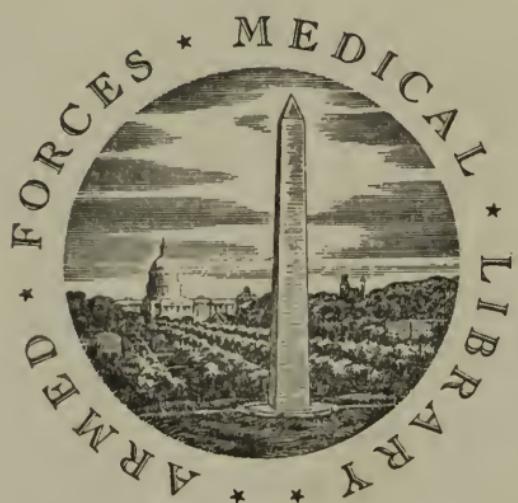
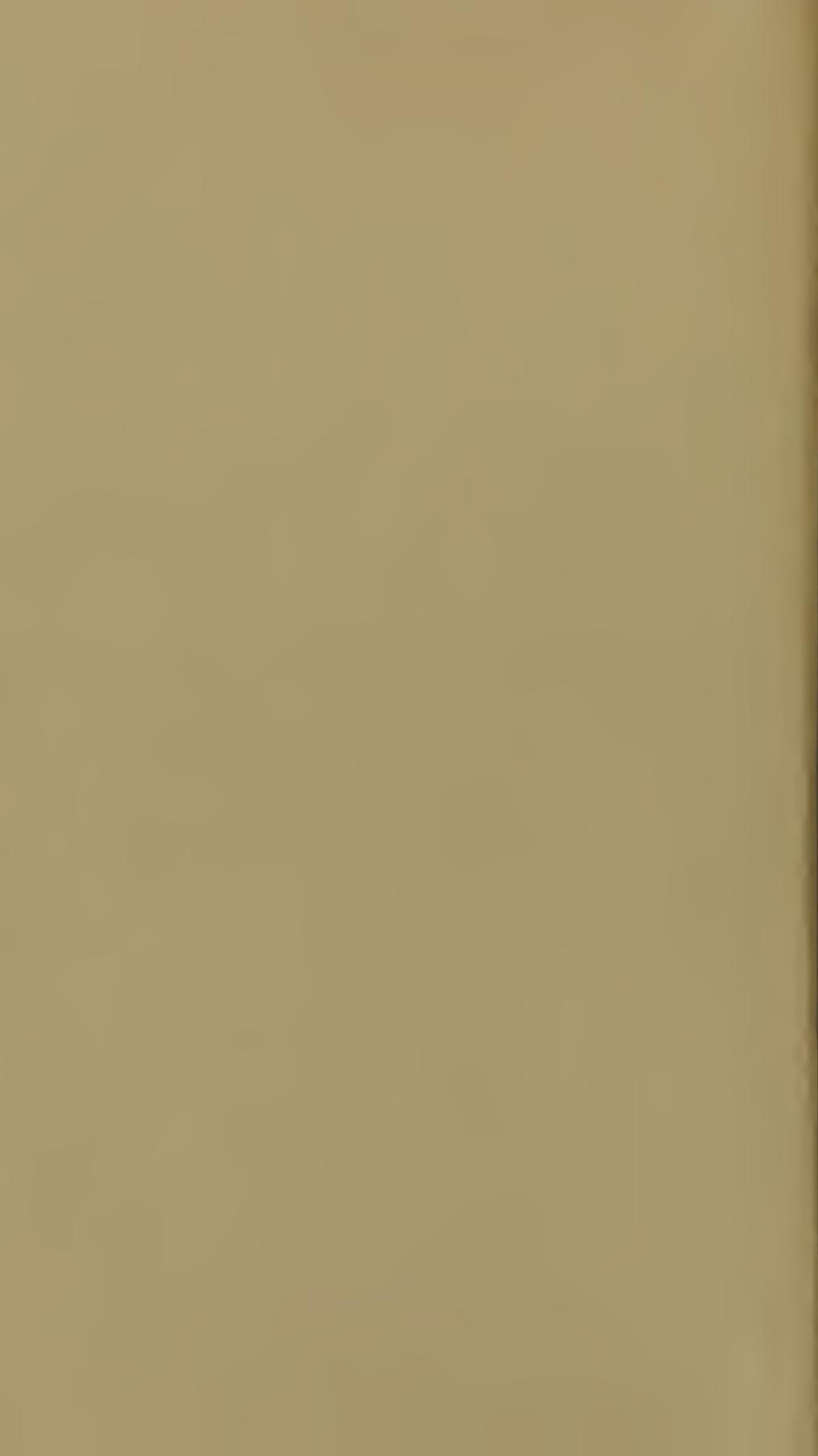


UNITED STATES OF AMERICA



FOUNDED 1836

W A S H I N G T O N, D. C.



DISSE

R T A T I O N

ON THE

SALUTARY EFFECTS

OF

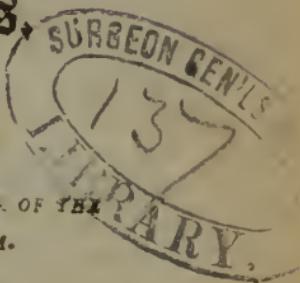
M E R C U R Y,

IN

Malignant Fevers,

Br JAMES STUART,

A NATIVE OF VIRGINIA, AND RECENT MEMBER OF THE
ACADEMY OF MEDICINE OF PHILADELPHIA.



Præpetibus pennis ausus se credere cælo:
Insuetum per iter gelidas enavit ad arctos.

Virg. Æneid VI.

Ne mea dona tibi studio disposta fideli,
Intellecta priusquam sint contempta relinqua,

Lucret. Lib. I.

Philadelphia:

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1798.

A N

Inaugural Thesis,

SUBMITTED TO THE

EXAMINATION

OF THE

Rev. John Ewing, S. T. P. Provost:

THE

T R U S T E E S

AND

Medical Faculty

OF THE

UNIVERSITY of PENNSYLVANIA,

FOR THE

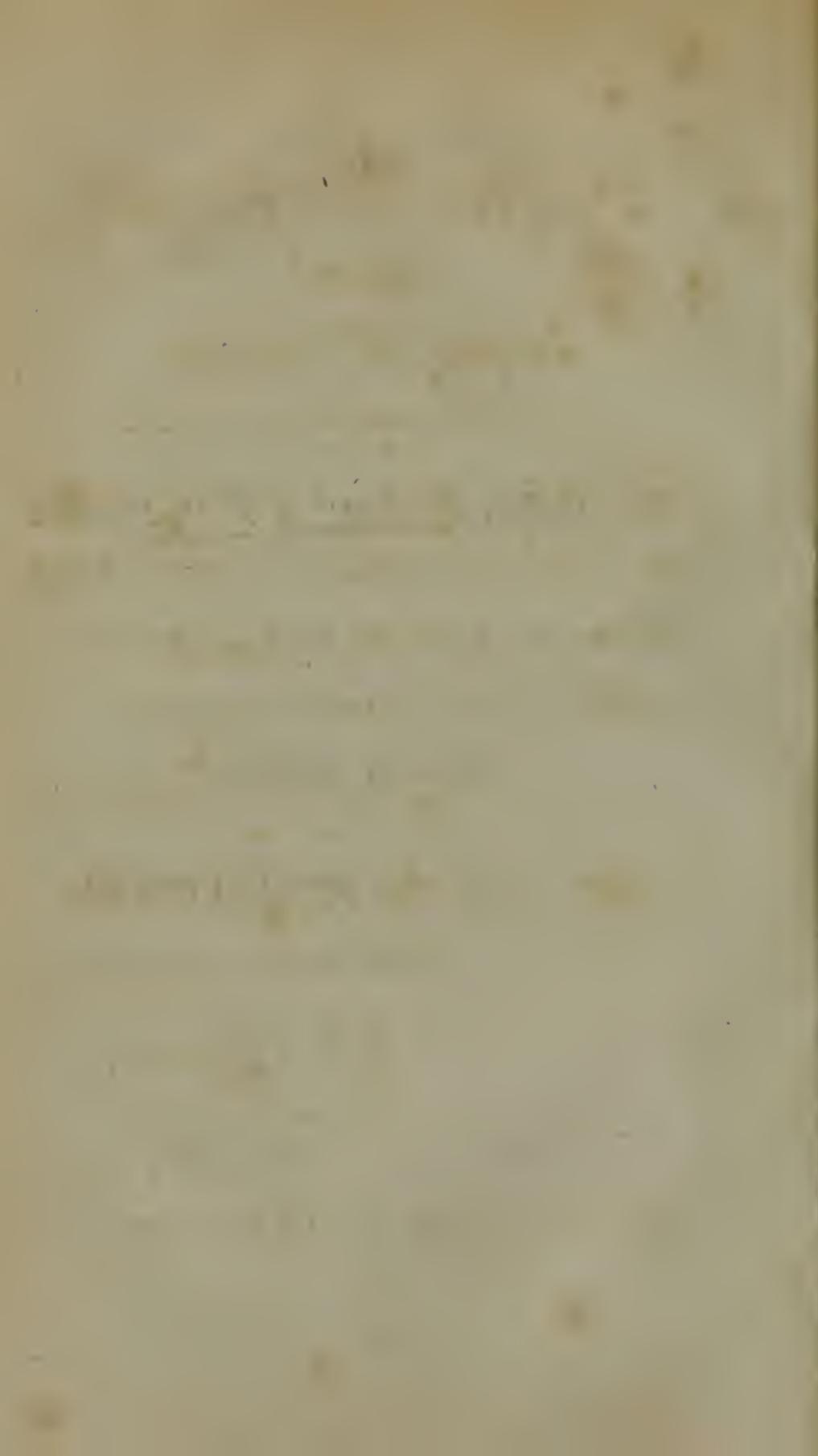
D E G R E E

OF

DOCTOR OF MEDICINE,

ON THE 22nd. DAY OF MAY, 1798.

3997 30



TO

DR. FENWICK FISHER,

OF THE

State of Virginia,

AS a public testimony of esteem and gratitude for his many kind offices as a friend and diligent preceptor in the science of medicine,

This Dissertation is inscribed,

By his respectful friend,

And former Pupil,

THE AUTHOR.

TO

Benjamin Rush, M. D.

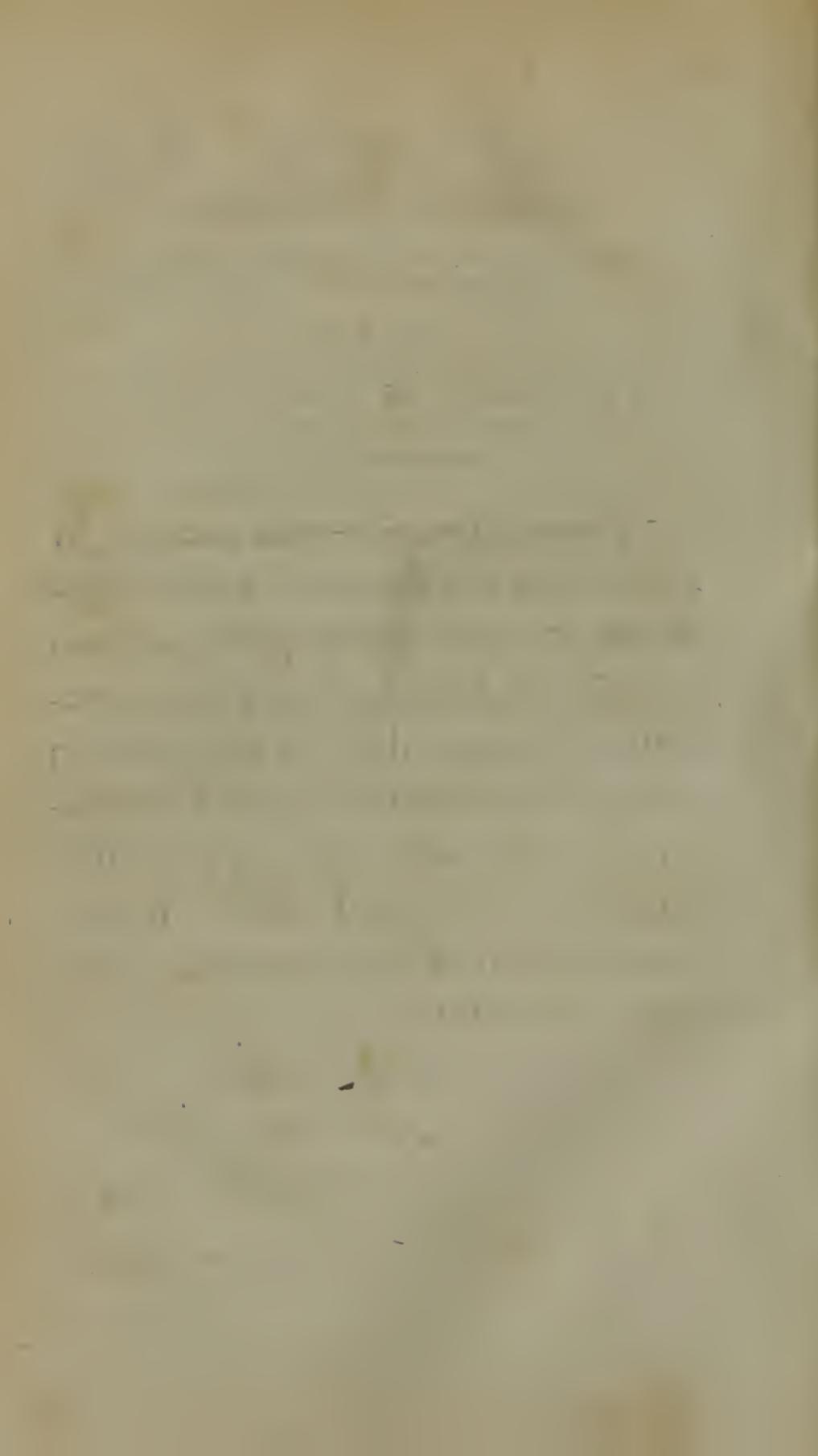
PROFESSOR OF THE INSTITUTES AND PRACTICE OF
PHYSIC, AND OF CLINICAL MEDICINE,

IN THE
UNIVERSITY OF PENNSYLVANIA.

PERMIT me, Sir, thus publicly to return you my sincere acknowledgements, for your many polite services as a private friend, and for the numerous advantages derived from you, in your public capacity, in this University, and at the same time, be pleased to accept of unfeigncd wishes for the continuation of your health and welfare, from your

Obliged friend,
And very
Humble Servant,

THE AUTHOR.



INTRODUCTION.

If any Medicine from general utility and acknowledged virtues in relieving the miseries of humanity, demands the exclusive attention of the Physician, that surely is the one which I have chosen as the subject of this essay. Mercury has not only eliminated the Venereal Virus, humbled the obstinacy of Dropsy, broke the enchantment of Epilepsy, and subdued an innumerable host of diseases, equally inimical to life, but now compels malignant fevers to own its sway.

To do justice to the Merits of this hero of the *Materia Medica*, and to point out its excellencies in the cure

INTRODUCTION.

of every disease in which it has been successfully employed, would require more time than I, at present, can take up, and extend this Treatise to a length beyond what is generally assigned to an Inaugural Dissertation. I shall therefore confine myself to treat only of its salutary effects in what have been termed putrid, or malignant fevers, and in accomplishing this, the subject will be divided into four heads.

i. I shall define the term *Malignant*, and offer a few remarks in proof that all diseases are equally Malignant in proportion to the prevailing *Inflammatory Diathesis*.

ii. I shall consider the *Modus Operandi* of Mercury when applied to the System.

INTRODUCTION.

III. The different modes of applying it and the several means of assisting the operation.

IV. And LAST. The treatment of the Mouth during a salivation; and the remedies for checking it, and the objections from injury to the Teeth and Constitution.

If in treating of some of these particulars, the benevolent reader should perceive me stepping aside from the beaten track of his preceptor, and be inclined to associate his censure with my name, I earnestly solicit his indulgence, and beg him for a moment to suspend his conclusions until he reflects that when the animal economy is under a morbid stimulus, it is in proportion to the force of that

INTRODUCTION.

stimulus, insensible to all others : hence the almost astonishing doses of opium, daily exhibited in Tetanus, would prove fatal to the same person while under the influence of only the ordinary stimuli of health ; I trust he will then feel no more offence at the exhibition of twenty grains of Calomel every three or four hours in the most violent stages of malignant fever, than that the Peruvian bark, which was once dealt out by Physicians in doses of twenty grains, with a farcical solemnity and all the mystery of Magic or Necromancy, should be administered by nurses in doses of half an ounce.

Dissertation, &c.

I. DEFINITION OF THE TERM MALIGNANT.

PHYSICIANS from the time of Hippocrates to the present day have agreed in affixing to a certain assemblage of symptoms occurring in febrile diseases, such as a grim cor-daverous countenance, great prostration of strength, a disposition to faint on being raised up, petuhiæ, vibices, dissolved blood, hemorrhagy from different parts of the body, &c. the term *putrid* or *malignant*. The term putrid, originated from a supposition that these symptoms depend on a putrescent state of the fluids,* but since modern experiments have proved, that such a state in the living body can never take place,† the term has given place to the less exceptionable one of malignant, and lately

* vid. Cullen's first lines Sect. 72.

† Dr. Sybert's Inaugural Dissertation

to the Gangrenous state of fever. † The term malignant probably arose from the ferocious, or malignant countenance of the patient, observable in this state of fever.

A case is said to be more or less malignant in proportion to the violence of these symptoms, and as a greater or less number occur in the same time and patient ; but, unfortunately neither writers or practitioners have been so unanimous in their opinions or practice, of the proximate cause, or in their methods of cure in this state of fever. Hence Sydenham complains of the practice of his cotemporaries, “ *Cum in eaæ febres presertim Malignæ dicantur, in quibus intensioris præ ceteris imflammationis gradus conspicatur, hinc medici se ad usum cardiacorum, et alexipharmacorum nescio quorum contulerunt, quo scilicet per cutis poros expellant, quod somneant venenum (hoc enim est dicendum, nisi malint verbis ludere, quam illud quod potest intelligi, serio proponere) ex quo factum est ut regimen caledissimum, methodumque huic parem, iis morbis adaptaverunt, quæ frigidissima tum* ”

† Dr. Rush's proximate Causes of Fever.

“ remedia, tum regimen, præ ceteris abi
“ postulabant.

That malignant symptoms depend upon an Inflammatory Diathesis, or great excess of stimulus, I infer,

1. From the same remote and exciting causes which produce inflammatory fevers, when applied in higher degree, producing the Malignant state of fever.

Hippocrates in his Epidemics mentions a case of putrid bilious fever being brought on from the stimulus of a Caustic, and Dr. Boerhaave in his definition of a Synochus says “ it has been customary to call that disease a putrid Synochus, (i. e. a malignant fever) which arises from the more violent causes of Inflammation.” And his commentator Baron Van Swieten, under the same aphorism considers, “ a high degree of stimulus the exciting cause of all malignant fevers.”

2. From the effects of blood-letting in this state of fever, for an account of which as I

have nothing to add, I beg leave to refer to Dr. Rush's defence of blood-letting.

3. From the facility with which the inflammatory and malignant states of fever are changed into each other.

Dr. Huck, in his remarks on the fevers of Jamaica says, " It often depends upon the manner in which the patient is treated in the beginning, whether he shall have a yellow or only a remitting, or intermitting fever," and a case is recorded in the Medical Essays to this purpose, a—Girl, who was afflicted with a Tertian, took a draught of spirit of wine, hot ale and ground pepper, and in consequence was seized with a violent continual fever; but, when the continual fever went off, the Tertian returned with great irregularities, attended with the most obstinate and malignant symptoms. In further proof of this, I will relate a case that occurred in my own practice. In August, 1797, a young man was afflicted with a Quotidian, attended with dysenteric symptoms, and was cured by small bleedings, calomel and opium; a few days afterwards, the Quotidian returned without any

dysenteric symptoms, but he unadvisedly took large doses of laudanum, and drank hot spiced brandy (with a view, as he said, of sweating off his fever) by which means it was accended to a high degree of malignity, the dysenteric symptoms returned, and he died yellow with symptoms of a mortification of the intestines, on the fifth day from the commencement of the continual, form.

Whilst on the other hand, it is equally certain that the most malignant state of fever may be changed to that state where sify blood occurs, and finally, that may be reduced to the diathesis which constitutes health by no other means than a perseverance in the antiphlogistic remedies. In confirmation of which I refer to authors who have employed blood-letting as a remedy in these fevers*.

4; From all fevers, under certain circumstances assuming symptoms of the highest malignity.

The small-pox, for example, in a good constitution and under proper treatment, is acknow-

* Brotius, Sydenham and Rush.

ledged to be uniformly a mild inflammatory fever ; but, by a hot regimen and the abuse of stimulating medicines it may be ascended to a grade of malignity equal to the plague, hence in Minorca, before the nature of this disease was well understood, the most of those who survived an attack, remained blind, consumptive, or lame, with caries of the bones, florid ulcers, &c. so that Mr. Cleghorn justly considered it to approach in violence the plague.* The same remarks are applicable, only in a less degree, to the Putrid Sore Throat, the Pleurisy, Rheumatism, Gout, Measles, Influenza, Dysentery, Scarlet Fever, Puerperile Fever, Jail Fever, &c.† for a particular account of which, I refer to authors who have professedly treated on each of these diseases.

Galen was long since acquainted with this relation between the inflammatory and malign-

* Cleghorn's account of the diseases of Minorca, p. 277.

† In Mrs. Jeffrey's case, near the New Market, last autumn, symptoms of malignity attended a difficult and excessive discharge of the menses. She was relieved by several bleedings at the arm and the use of calomel joined with frictions of mercurial ointment on the region of the uterus which excited a gentle affection of the mouth ; the blood was at first florid without a disposition to separate, and at the second bleeding it became fizzy.

nant state of fever, and said " that symptoms of " malignity or putrefaction only varied as nature " overpowers the disease, or is herself overpow- " ered, and that in inflammations she overpow- " ers the disease."* This opinion, although not in the language of the present day, is very emphatically expressed, as in cases of malignity the excitability of the blood-veffels is prostrated from excess of force, nature may be said to be overpowered;† in what are called inflammatory fevers, attended with fizy blood, &c. stimuli have been applied only adequate to excite the highest convulsive action in the blood-veffels, and less than sufficient to induce paralysis, rup- ture, effusion, &c. and here, nature may properly enough be said to overpower, as she is still ca- pable of reflecting the force of stimuli. After what has been said, I shall define *a malignant fever to be that state of fever in which there is overaction in the blood-veffels, or a defect of*

* De februm differentia, lib. i. cap. vii. chart. tom. 3, p. 115.

† Omnia hæc exinde tantum procedere, quod natura a primo morbi impetu quasi oppressa, devincta: non satis valida est ut symptomata regularia et magnitudini morbi consona exarserat; omnia vero phenome- na prorsus sunt anomala. Etenim perturbata economia animali, et quasi disiecta, febris exinde deprimatur, quæ obtinente genuino natu- ræ ductu, vigore solet. Sydenh. Schedul. Monit, de Novæ febri Ingressu, p. 542 et passim.

action and a disposition to paralysis or gangrene, from great excess of stimulus. Thus, Regulus, after loosing both his eye-lids and a long confinement in a Carthaginian dungeon, upon sudden exposure to the rays of a meridian sun, must have been in the midst of darkness from the excess of surrounding light.

II. THE MODUS OPERANDI OF MERCURY, WHEN APPLIED TO THE SYTSEM.

1. As an evacuant of Fœces, Bile, Mucus, and Lymph.

To any one who considers the great degeneracy of some, and the increased quantity and vitiated quality of others of these substances in malignant fevers, the necessity of immediately discharging them will be sufficiently obvious, and accordingly, most prudent physicians have been anxious to excite stools as soon as the circumstances of each particular case would admit of, but generally with an intention of preventing an accumulation of putrid matter, and thereby obviating any farther accession to the putrid ferment, on which this state of fever is supposed to depend ;

but, in effecting this, from an apprehension of inducing a fatal debility, they have mostly confined themselves to the use of purges of the mildest nature, such as the neutral salts, Senna, Manna, Creamor Tartar, &c. but, since this supposed putrid state of fever has been proved to depend upon excess of stimulus, and since the application of a caustic* eating of a particular kind of fish,† and large doses of opium‡ have each been known to produce the same alarming symptoms as are occasioned by what are generally called putrid contagions, this intention of cure proves to be badly founded and is to be changed for the more rational one of abstracting from the sum total of stimuli. These matters are often so acrid as to excoriate the rectum and the skin of the external parts. When long retained they prove a nidus to contagion, and concentrate it when already present. By mechanical pressure, from an accumulation of fœces in the large intestines, the capacity of the veins are diminished, the passage of the fluids through the smaller arteries is straitened, and a larger quantity of blood thrown on vital parts.

* Hippocrates' Epidemics, book iv.

† Desportes.

‡ Rush.

Both evacuations and dissections shew the increased quantity and vitiated quality of the bile, which takes place in some of these fevers. Mr. Cleghorn mentions vast quantities of this fluid discharged in the malignant Tertian of Minorca, and I have seen nearly two quarts evacuated in the short space of 24 hours; my own case in the bilious yellow fever of 1793, exhibited fully an equal quantity, it was so acrid as to excoriate the fauces, tongue, lips, and anus with the external skin wherever it touched. Dr. Physick's hand was inflamed by the acrid matter found in the gall bladder and *primæviæ* in dissections made in this city, in the yellow fever of the same year. The Doctor supposed this matter found in the intestines to be an altered secretion from the liver. Mr. Cleghorn dissected nearly one hundred bodies that perished by the malignant tertian at Minorca, and says he always found the *Vesica fellea* full and turgid and the stomach and Intestines overflowing with bilious matter.

But, notwithstanding the large secretion of this fluid that takes place in some of these fevers, cases occasionally occur, in which it is entirely absent, in which the fæces first discharged are white and float on the surface of the water like light wood, and in all other respects are similar

to those accompanying the jaundice. Dr. Chisholm takes notice of their appearance in the fever of Grenada in 1792, and they frequently occur in the yellow fever, accompanied with great anxiety and soreness in the region of the liver ; it is a symptom of dangerous prognosis, as it shews such an engorgement of the vessels of that organ as threatens an immediate paralysis or gangrene. This opinion is confirmed from the large quantities of bile and the relief afforded from the exhibition of purges which have a specific operation on the liver.

From the preceding observations and the dissections cited, it would seem that the matter found in the intestines was always merely a vitiated secretion from the liver ; but from some experiments made on the black vomit discharged in the yellow fever of this city, in 1797, I am satisfied that this is not always the case, and that its sources are frequently various. In four instances I touched the tip of my tongue with some of this matter ; in three of these cases there was some difference of appearance. The first, at a small distance, very exactly exhibited the colour and consistence of Coffee grounds ; but, when more closely inspected, the fluid part was of a dark greenish colour, and the lumps brownish

and soft. It imparted upon its first application to the tongue, an intensely bitter and a very nauseous taste, in about half a minute a prickling sensation was perceived, which I can compare to nothing but that excited by the fine prickles of the prickly pear. The patient who discharged this matter, had vomited and purged bile early in the disease, and died on the fifth day from the attack, soon after I first saw her.

In the second case the discharge came on the seventh day of the disease, and at a small distance was similar to the former; it was found to be brownish, or rather of a chocolate colour, and extremely nauseous in scent and taste, but it did not produce the last sensation on the tongue. This patient had a hemorrhagy from the gums, and the stools were similar to what was vomited up: she recovered after lying three days under this discharge without any perceptible pulse. In the third case, the matter was discharged by a child about four years old, on the fifth day of the disease. She had white stools throughout the whole course of the disorder, and on the two first days nothing was discharged by vomit, but mucus and the liquids drank, she was early comatose, and discovered great anxiety on being roused; on the third day, the

mucus became streaked, with a greyish colour, as if a small portion of ashes had been stirred in it, but on the fourth and fifth days, very dark, although upon a nicer examination, it was still streaked with phlegm. This discovered, on its first application to the tongue, neither taste nor smell; but, in a short time excited the same pricking sensation as the first.

In both the first and third of these experiments, small pimples came out on my tongue, in a short time, and disappeared in about ten or twelve hours. From these facts it appears, 1. That the black matter discharged from the stomach and intestines, in some of these fevers is often of different properties, and is to be referred to different sources, 2. That it is not always necessarily a fatal symptom, and that when it takes place, the probable issue of the disease may be prefaged from the knowledge of its source.

The first matter which I have noticed, from its greenish colour and bitterness of taste, may be considered as an altered secretion from the liver, with a mixture of blood from the eroded

vessels of that organ ; I refer its source to disorganization, and from this cause it must be necessarily a fatal symptom.* The subject of the second experiment from its late occurrence, from the hemorrhagy from the gums which attended, from its intolerable stench, from its want of acrimony, and more especially, from the frequent recoveries which take place after its occurrence, must have been grumous blood, issuing by diapedesin or rupture immediately into the stomach and intestines or swallowed from the mouth. The last, from the gradual changes it went through in acquiring a dark colour, from its mixt heterogenous appearance, from the absence of a bitterness of taste, from its want of smell, and lastly from the discharge of white stools through the whole course of the disease, I refer to an altered secretion from the arteries of the stomach, which, in a healthy state, were wont to secrete mucus and the gastric

* Dr. Rush mentions two patients, which recovered from the Yellow Fever of 1793, after discharging black matter, on the first day of the disease, but as no mention is made of the lumps which give it what has been called the Coffee ground aspect, and from his own remarks. I conclude it must have been nothing more than a dark bile, without any *erosio* of the part from whence it was derived.

fluid.* Possibly cases may and do occur, in which all these fluids are present in the primæ viæ, at a time ; but, from a determination of the fluids to any particular part, being known in some degree to exempt other parts from injury, such an occurrence must be rare. It may be said in contradiction to this remark, that in cases, where the discharge indisputably proceeded from the liver, dissections have shewn the stomach and intestines in an inflamed or even in a gangrenous state ; but, this was the effect of matter externally applied, which is known to destroy secretion, and from the immediate disorganization of the vessels, no discharge afterwards takes place until sloughs are cast off, which as coming from living and healthy vessels, must be always bland and inoffensive ; this is illustrated from the effects of a caustic ; the part to which it is applied, first contracts and squeezes out the lymph before contained in its vessels, a slough is then formed, upon which all further discharge ceases, until that is cast off.

* " The blood is here so much resolved, that before death it enters the smallest serous vessels, tinges the saliva and the serum discharged by a blister, and by oozing into the Stomach gives that blackish cast to what is then thrown up." Pringle's Diseases of the army, p. 197.

The yellowness of the serum in these fevers has been supposed to depend upon bile in its compound state, but, experiment has convinced me that this supposition also is erroneous. In a case of Yellow Fever last autumn, I tasted the serum taken when the patient was very yellow; it was unusually saline, but without the least bitterness of taste. A few days afterwards, I made the same experiment on the serum, from the blisters of an iatertious patient, which was the yellowest I ever saw, but not in the least bitter, nor unusually saline. The acrimony of the humours therefore, altho' the colouring matter of the bile is so eminently conspicuous, does not depend on the presence of that fluid in a compound state, but upon the acquisition of an increased proportion of salts.

I have been the more particular in this digression, not only with a view of elucidating the operation of mercury, in the cure of this state of fever, but, because the discharge of the Black Vomit, is so strongly associated with the death of the patient, as the inevitable consequence, that he is commonly deserted both by physicians and attendants upon its first appearance, and often,

when by a perseverance in proper remedies, life may be preserved *

I now come to mention in a summary view, the several good effects of mercury in evacuating the different humours, which have been noticed to be present in the first passages in this state of fever.

1. By evacuating them early in the disease, any farther encrease of acrimony is prevented.
2. The generation or concentration of contagion is prevented by the same means.
3. The stimulus from the mechanical pressure of hardened fœces is removed, the capacity of the veins of the larger intestines is increased, and a revulsion from vital parts effected.
4. An accumulation of bile is prevented and its regurgitation into the stomach.

* This took place in a case which I have mentioned in another part of this Essay. A gentleman of respectability in his profession was called on at the first appearance of this discharge, in consultation with me. Upon seeing the matter, he pronounced her irrecoverable, I told him, I supposed it consisted of blood, and was not the result of disorganization, he answered, that if I thought so, he should leave her in my care, as he did not think it worth while to take her case into consideration, and went away without any other proposals. As the patient recovered, the truth of my suspicions was confirmed.

5. The white colour of the fœces is changed, the anxiety and oppression attending are relieved, and the yellowness of the skin prevented.

6. From its specific action on the hepatic system* the stimulus of contagion is superceded, congestion is removed, and hemorrhagy from that organ prevented.

7. In depleting the extremities of the vessels, and affording an opportunity to them of contracting, it prevents hemorrhagy from the stomach and intestines.

8. By creating an artificial weak part in the intestines, the effusion of lymph, serum, &c. in vital parts is prevented.

9. By removing acrid matter immediately from affected parts, it takes off indirect debility and strengthens the patient. †

* In proof of this specific action I refer to its effects, in what has been improperly termed Idiopathic hepatitis.

† For these effects of purging I refer to Sydenham ;
Hillary on the diseases of Barbadoes ;
Clark on diseases in voyages to hot climates ;
And Dr. Rush's account of the effects of purging in the Billoou :
Yellow Fever of—93.

II. It induces a counter stimulus in every part of the vascular system, and by a determination to the throat and mouth saves vital parts. The cure of all fevers, consists in exciting a new action in the vessels, or one, different from that which constitutes the proximate of the disease* and accordingly no sooner do signs of the mercurial action appear than all untoward symptoms begin to decline. On its effects in dysentery, Dr. Clark has made the following remarks, " For several years past," says he " when the dysentery has resisted the common modes of practice, I have administered mercury with the greatest success, and am thoroughly persuaded, that it is possessed of powers to remove inflammation and ulceration of the intestines in this distemper." † Dr. Gilchrist, at a much earlier period, has noticed this salutary property of mercury in curing inflammations. " Nothing embarrasses more" says the Doctor, " than Inflammation in a low state; but, quicksilver is a powerful antiphlegmistic, and removes inflammation without accelerating the

* Hence the action of Peruvian Bark, and other comparative low stimuli in curing slight cases of Fevers, may be accounted for.

† Clark on diseases of voyages to hot climates.

“ motion of the fluids, which it rather diminishes by subduing their inflammatory disposition, when there is little or no fever, it as powerfully removes obstruction without diminishing the impetus of the blood; on a proper degree of which resolution depends.”

I apprehend these effects in relieving intestinal inflammation may be referred to a threefold operation. 1. To its action immediately on the topical affection. 2. To its general operation on the blood-vessels. 3. To its operation in removing acrid matter from the parts affected by purging.

1. In relieving topical affection. This may be understood from its effects when topically applied to external ulcers, by which a furious discharge is, in a short time, changed for a laudable pus. Before I dismiss this subject, I must remark, that mercury appears to me to possess exclusively the property of superseding the action of all animal poisons, whether generated in the body by altered secretions from its own organs, or derived from other animal matters externally applied: * this supposition derives

* Dr. Rush, in his account of the Yellow Fever of 1793, has remarked, that swellings of the Lymphatic Glands did in no instance suppurate, where

support from its known effects, in the venereal disease, hydrophobia and small pox, which are all acknowledged to depend upon the specific stimulus of animal poison ; perhaps, upon this principle, it will be found a specific against the bites and stings of all venomous animals and insects.

2. Its general operation on the blood-vessels. For this purpose it must be introduced into the circulation. This may be done by the several modes to be hereafter described. Its action in this way is proved both from the change in the pulse and in the secretions succeeding its use, for an account of which I refer to authors who have employed it in the cure of febrile complaints.

3. By removing acrimony immediately from the parts affected. This effect has been before noticed in this treatise, when treating of its effects as a purge, to which I now refer.

The salutary effects of a spontaneous salivation, arising in the malignant state of fever,

a mercurial salivation took place. Perhaps, this may be referred to this property of Mercury in counteracting or superceding the operation of the poison thrown on these glands.

have been noticed by many writers on pestilential diseases.* But, these effects are much more conspicuous from a mercurial salivation. I will here enumerate the most important.

1. When copious, by abstracting stimulus from the blood-vessels, it gradually reduces the pulse and obviates the further necessity of purging and bleeding.
2. By producing a new excitement, and a different determination to the fluids, it relieves the burning of the stomach and the distressing vomiting in these fevers. Large doses are more generally attended with this effect than small ones. This appeared in a very striking manner in the case which I published in October, 1797. The patient had been bled and purged freely, and was under the use of mercury, in nearly all the forms hereafter to be recommended, while the vomiting was still distressing, with little or no mitigation of the other symptoms, until by a mistake the nurse gave at one dose, a drachm of calomel which had been left to be rubbed on the lips and gums, after which, her vo-

* Charnham's account of the Continual Fever of 1667—68, and 69.
Also Huxham's Essay on Fevers.

miting suddenly ceased, and the other bad symptoms declined until the sixth day, when a discharge from the salivary glands appeared, which was succeeded by convalescence.—

Dr. Rush, in his account of the yellow fever, of this city in 1793, says “ the effects of mercury in every case where salivation was induced were salutary.” Dr. Wade, in his account of the same disease in Bengal, gives the same favorable account of a mercurial salivation. Dr. Chisholm says “ that if a salivation (in the Boullam fever) was speedily raised, the danger was removed, and the patient recovered,” and Mr. White, who practised in the same disease, declared, he did not loose a single patient, where a quantity of mercury had been given sufficient to excite salivation. I can also here add my own experience as a tellimony in favour of this evacuation. As in all the cases I knew or heard of, where salivation took place in the Yellow fever of 1797, I knew of but one where the disease proved fatal. This patient perished by a hæmorrhagy from the gums on the tenth day of the disorder, and after all other bad symptoms had ceased. I impute this unfortunate event to his not losing a sufficient quantity of

blood early in the disease, as I did not see him before the fifth day of his illness. The advantages of salivation in malignant fevers are further established from its good effects in the plague at Algiers. One of the American captives, who was ransomed at the time when a peace was concluded between the United States and the Dey, and now in this city, asserts that mercury was in general use in the cure of that disorder, that he had it himself, and was cured by a salivation, with the assistance of sixteen bleedings. There is also another advantage resulting from this action in the blood-vessels, as relapses never take place where the discharge is sufficiently established.*

III. THE DIFFERENT MODES OF APPLYING IT, AND
THE SEVERAL MEANS OF ASSISTING THE OPERATION.

And 1. By the mouth.

2. By the gums.

3. By frictions.

* vid. Chisholm on the Malignant Pestilential Fever, &c.

4. By shoes or socks impregnated with the ointment.
5. By ointment in the form of Clysters.
6. By fumigation.

1. By the mouth. Salivation may be induced by all the various and almost innumerable preparations of this mineral which chemistry presents; but, as it is necessary to keep up some purging during the whole course of these fevers, for the reasons before mentioned, and as calomel or the Hydrargyrus muriatus mitis possesses a purging property in an eminent degree over most others, and since it is one which has been most employed, and more especially since, from general use its virtues are better established, I shall prefer it to every other preparation for internal use in this state of fever. In the first days of these fevers, from the observations before made, strong purges are indispensable, and from their rapid progress and dangerous tendency there are to be so employed as to produce as speedy an operation as possible. For this purpose, ten or fifteen grains of Jallap are to be combined with ten grains of Calomel, and given every three hours until a discharge is procured, and

as pills are known, sometimes to pass through the whole tract of intestines in an undissolved state, and from the obstinate obstruction which here attends, a large quantity of these purges may, probably, if given in the form of pills, be accumulated in a portion of the intestines and become productive of inflammation and its consequences; they are always to be given in the form of powders. I know to those who are regulated more by the names of diseases than their symptoms, that such doses may seem inadmissible; but experience has established their safety, and we are here “to attend more to the effects produced than to the dose.” *

In many cases five or six of these doses are necessary before the desired effect is produced. Mr. Wm. Bunting’s apprentice boy, who was but eleven years old, in the yellow fever last season, took two doses of five grains of jallap, with the same quantity of calomel, each at the interval of two hours, and afterwards, four doses of ten grains each, at the interval of three hours between, before any evacuation took place. To induce salivation, from three to five grains may be given every three hours, and cases occur, where ten or even twenty grains may be given

* Pringle’s Diseases of the Army.

at the same intervals of time, not only with safety, but with advantage. Dr. Chisholm gave nineteen grains three times a day, and the patient became convalescent after the tenth day, when he had taken 254 grains. I have even gone farther in its internal use with the greatest success. In one case, which I have before cited, the patient took three hundred and fifty six grains internally, in six days, during which time, every other method of introducing Mercury into the system was employed. At seeing this account let not the rigid dogmatist contract his brow into a frown of disapprobation ; but, rather let him learn, that where we would meet with success “ we must always accomodate the curative “ force to the morbific or cause of the disease.”* The form of powders is here also recommended in preference to pills or boluses, both for reasons before mentioned, and because, in swallowing them, part of the calomel adheres to the fauces and throat, by which means, the absorbing surface is increased. If the calomel be triturated with twice its quantity of loaf sugar, the patient, before an advanced stage of the disease, can take it without any other addition ; but, in this case, from the dryness of the mouth, fauces

* Brown's Elements.

and œsophagus and from the debility in the organs of deglutition, a small portion of some liquid must be added to facilitate its passage into the stomach. In this way a salivation is often excited in slight cases, in the space of thirty six hours; but, in cases of more violence, a perseverance for five and even ten days is often necessary, and sometimes the irritability of the intestines is so great as to render it impossible to excite this discharge by any internal preparation whatever. When this happens, they are to be laid by, and recourse is to be had to some, of all the means hereafter described.

2. By the internal surface of the cheeks and lips and by the gums. Mr. Clare particularly recommends this mode of introducing mercury into the constitution,* and Dr. Woodhouse found it speedy and effectual in the Yellow Fever of 1793. I suspect it was effectual only when received into the circulation; and as it is probable salivation may be induced merely from the local and partial operation of mercury on the salivary glands without its producing any change of action in the general system of

* A New Method of introducing Mercury into the circulation, by P. Clare, Surgeon.

blood-vessels its use is not to be relied on, without employing other means at the same time.* To introduce mercury in this way, calomel is rubbed in on the gums, the inside of the lips and cheeks, or the mouth is washed with a solution of corrosive sublimate in water several times in the day.

3. By mercurial frictions. The large number of absorbents, spread over almost the whole surface of the body, and the effects speedily produced by mercurial frictions, eminently prove the facility with which mercury in this way enters the constitution and the determination which it discovers to pass off by the Salivary Glands, when thus introduced, renders it advisable to make an early trial of its efficacy in all cases of great danger. To produce a speedy an effect as possible, the whole body and extremities are rubbed twice or thrice, a day, with large quantities of the strongest mercurial ointment ;

* The late Dr. Wm. Annan, in his last illness in the Yellow Fever of this city in 1797, exhibited a melancholy instance of the local effects from this mode of applying Mercury. He had often during his illness, washed his mouth with a solution of Corrosive Sublimate, and when I saw him, two days before his death, and insisted on his using more Mercury internally, he urged as an objection, that his mouth was already sufficiently affected by the use of this gargle.

in more ordinary cases, rubbing the upper and lower extremities, particularly in the course of the absorbents, with half an ounce of the same ointment until it nearly disappears, twice a day will be generally sufficient ; before each inunction, it is necessary to wash the parts to which it is applied in soap and warm water, as by that means the mouths of the absorbents, are freed from the oily matter left from the former applications, come more immediately in contact with the fresh ointment. In these frictions, the nurse or person who performs, should take the precaution of inclosing their hands in bladders, otherwise, from the great facility with which it enters healthy vessels, to what it does those under morbid excitement, she will be salivated before any effect is produced on the patient.

4. By impregnating shoes or socks with mercurial ointment. This method, as far as I know, was first introduced into practice by me in the last fever that infested this city, and notwithstanding it has been supposed, that mercury enters the absorbents with great difficulty when applied to the skin without friction, experience has proved, that it is easily taken up, when applied in this way to the feet. At the time

when I first began to use this mode, the necessity of employing other means in the same cases, where these socks or shoes were worn, rendered it impossible to ascertain the time required to affect the mouth by this way, but since, I have salivated a venereal patient in four days time, by their use alone. In this mode, shoes or socks prepared of bladders, are to be well lined with strong mercurial ointment, and confined on the patient's feet.

5. Mercury has also been employed, with supposed advantage, in this state of fever, by clysters, prepared by adding the common ointment to starch or oatmeal gruel, these are to be frequently injected from time to time.* Probably Plenk's solution, would here answer a better purpose, as the mercury in this preparation, is less clogged, and from the absence of oily matter would be less likely to be immediately returned.

6. By fumigations. This mode of affecting the system, is remarkably speedy, in so much that the mouth is sometimes affected in the short

* This mode of introducing Mercury, was first employed by my friend Dr. G. Gillespie, on board the frigate United States, in 1797.

space of ten or twelve hours, but much danger has been apprehended from the application of these vapours to the lungs; this may be prevented by confining them to particular parts and in dangerous cases, we are by no means to loose the probable advantages to be derived from so powerful a remedy, on account of such slender objections. It is applied by sprinkling cinnebar of mercury on coals contained in some convenient vessel for the purpose, which is to be held under the hams of the patient, while he lays on his back, the knees are in an inflected posture, the bed-cloaths are to be well confined to prevent the escape of the fumes, and their affecting his lungs. From the aptitude of these fumes to affect the bowels with gripes and to pass off by stool, they ought always to be applied in a small quantity at a time, and frequently repeated, but they are immediately to be laid aside, as soon as the least affection of the bowels is threatened.

In whatever way mercury is employed in the beginning of these fevers, and more especially, where much febrile heat prevails, its operation is particularly assisted by blood-letting, and the application of cold water, rain cool air and even ice to the skin.

This practice has unfortunately been the subject of much obloquy amongst the physicians, who are rivetted to the dogmas of the former theory of the action of mercury, but as this theory is proved to be erroneous, and is now on the eve of everlasting oblivion, the fabric will ere long share the same fate with its tottering foundation. So far are cold applications from injuring the constitution, that their effects prove them always salutary, as they become an evacuant by abstracting heat, they relieve that intolerable burning of the skin, which is so distressing in this stage of fever, and so far are they from militating against the action of mercury, that they powerfully assist it, by lessening the prevailing febrile action. Nor is this city the only place, where the salutary effects of these applications, have proved so conspicuous as to warrant their propriety and general safety. A Dr. Armstrong in the West-Indies, with a view of assisting the operation of Mercury, in the cure of malignant fevers, is said to wash his patients frequently in cold water with the greatest success.

But in more advanced stages of the disease, where the skin is cold, and the pulse feeble or

imperceptible, every stimulating application to the surface, favours our views, for this purpose are to be applied sinapisins and blisters to the extremities; and cloths wrung out of hot brandy, saturated with sea salt, to be successively laid over every part of the body, and renewed as often as they become cool. Hot bricks or jugs filled with hot water are also here applied with advantage.

When we have produced the desired effect from the use of one or all these modes combined, it sometimes happens, that the profuse discharge from the salivary Glands, and the intolerable pains in the jaws and teeth, become objects of attention. When this occurs, two indications present. 1. It is necessary to mitigate pain. 2. To moderate the discharge and heal the local injury. The first intention, as we are, from the nature of disease which preceded and from apprehensions of relapse, debarred from the internal use of opium, is answered by topical applications. For this purpose opium is dissolved in water and the mouth washed frequently therewith, but I have lately found from experience that milk answers the intention much better than simple water, my first inducement

to use it was from its known properties of obtunding acrimony. My method is to triturate half a drachm of opium, in an ounce of pump water, and, when sufficiently dissolved, to add four ounces of new milk ; the mixture is then to be used as a gargle as often as the pains, &c. render it necessary. The second indication is answered, 1. by determining the fluids to other parts, and, 2. by increasing the tone of those affected. The fluids are called off by purges or laxatives, and blisters. Sulphur has been particularly recommended by some, not only as a laxative, but as it is known when combined with mercury to render it inert, it has been supposed to form such a combination in the system and thereby to possess advantages peculiar to itself, while others have denied it to possess that property. Which of these opinions is most correct, I will not here venture to decide ; but as the flowers of sulphur prove an efficacious and convenient laxative, and as they are possessed of equal virtues (if we do not allow it any superiority) they are still preferred. As we are here to keep up a gentle and regular discharge from the intestines, small and frequent doses are recommended. When the swelling of the salivary glands is great,

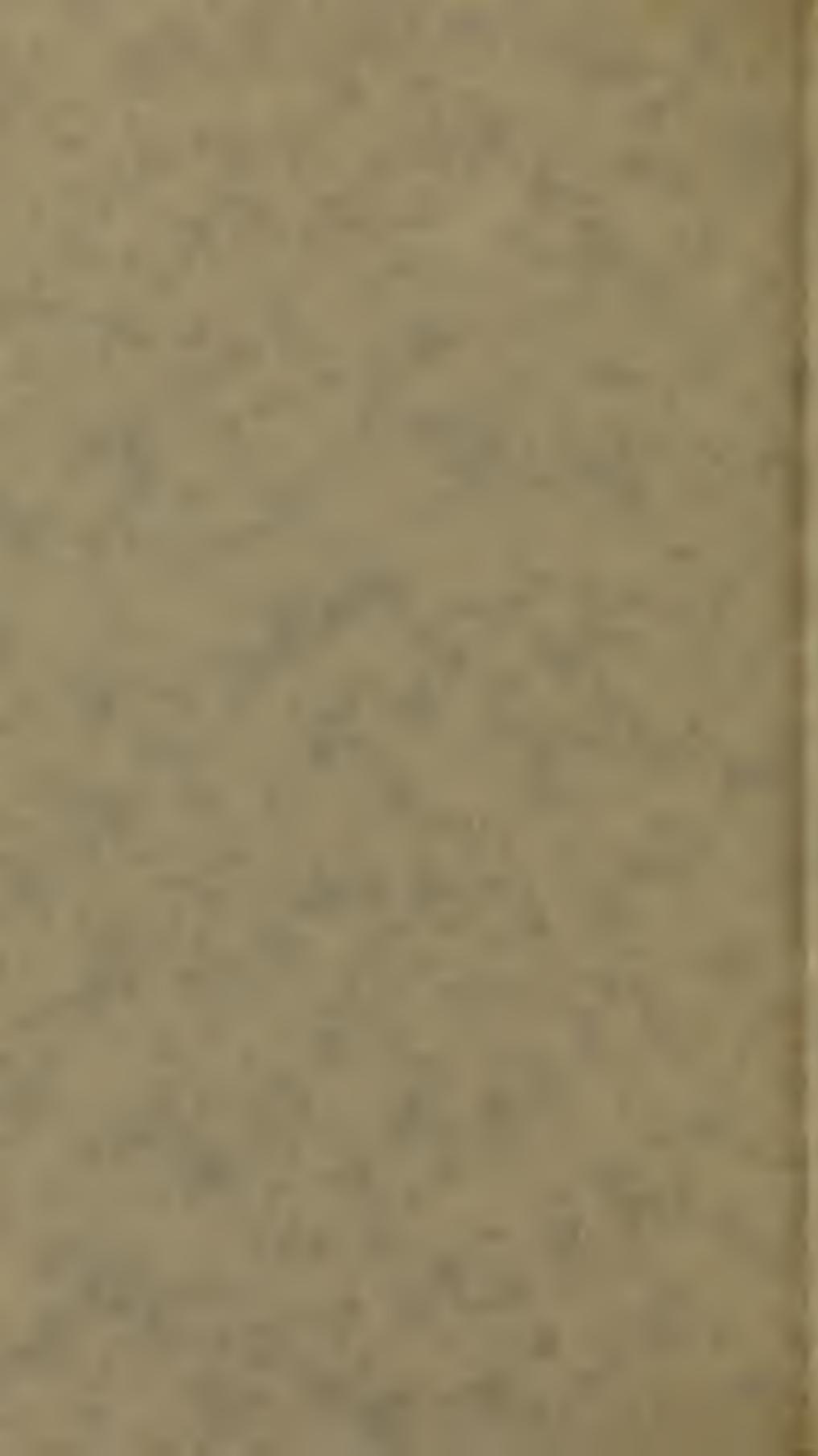
blisters are to be applied, either immediately to the swellings, or on the back of the neck. 2. The tone of the parts is increased at the same time by astringent gargles, composed of red rose leaves, red oak bark or galls, with a small portion of alum and honey. Mr. Bell recommends a strong solution of Borax, as possessed of peculiar virtues in answering this intention ; but, from what trials I have made of this, I am inclined to think it inferior in efficacy to several of the astringents before mentioned.

The introduction of Mercury into more general practice, has been retarded from a supposition of its injuring the teeth and constitution ; but these effects are imaginary and without foundation ; as, where the teeth have been found before its use, and the patient has been diligent in cleansing the mouth, while under salivation, they have never been known in a single instance, to sustain any injury.* To refute the supposition of injury done the constitution, we need only refer to the constitutions of those, who have recovered from malignant fevers by its use. Many have been cured of obstinate ulcers, swel-

* Vid. Rush's works.

lings of the joints, Rheumatic pains and Chronic obstructions of the viscera, and most enjoy better health than they ever had before its use. But, grant for a moment that the constitution is injured, and the teeth destroyed, from the use of this remedy. Is the loss of a tooth or a trifling injury to the constitution to be put in competition with almost certain death? I say almost certain, as the chance of recovery in Malignant fevers, without its use, is, at most, as one is to two. And I am firmly persuaded that, by its free and proper use, with the attention of nurses, and a strict adherence to the antiphlogistic regimen in the beginning of the disease, ninety nine cases of an hundred will terminate favourably. The belief, therefore, "that the yellow fever, plague, or other Malignant diseases are necessarily mortal, *will be proved* to be as much the effect of a superstitious torpor in the understanding, as the ancient belief that the Epilepsy was a supernatural disease, and that it was an offence against heaven to attempt to cure it."*

* Dr. Rush on the Bilious Yellow Fever, p. 328.



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